

**To:** Neale, Anne[Neale.Anne@epa.gov]; McDonald, Michael E.[McDonald.Michael@epa.gov]; Schumacher, Brian[Schumacher.Brian@epa.gov]  
**From:** Orme-Zavaleta, Jennifer  
**Sent:** Fri 8/14/2015 7:50:27 PM  
**Subject:** RE: Modeling update

Info well received. We might tap in to your skills more next week. Interest in what we can learn about private well risks. Thought you had a screen shot on that? Lets touch base first thing Monday

Sent from my Windows Phone

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**From:** [Neale, Anne](#)  
**Sent:** 8/14/2015 14:00  
**To:** [Koglin, Eric](#); [Sullivan, Kate](#); [Garland, Jay](#); [Schumacher, Brian](#); [McDonald, Michael E.](#); [Orme-Zavaleta, Jennifer](#); [Sayles, Gregory](#); [Kavlock, Robert](#); [Burke, Thomas](#); [EOC ORD](#)  
**Cc:** [Mehaffey, Megan](#); [Gillespie, Andrew](#)  
**Subject:** RE: Modeling update

Hi All,

Jennifer asked me to send out these thoughts from an EnviroAtlas perspective. Megan Mehaffey and I looked at the GIS project link provided in Eric's earlier email. We added several EnviroAtlas maps to the project as an illustration of how you can add EnviroAtlas web services to any mapping project. Just to be clear, we do not have the authority to add anything permanently to the project and our additions were only viewable on our desktops. I have attached a few ppt slides of screen captures showing EnviroAtlas data layers within the Animas GIS project:

Domestic Water Use summarized by 12 digit HUC (i.e., medium sized drainage basin)

Agricultural Water Use summarized by 12 digit HUC

Industrial Water Use summarized by 12 digit HUC

Residential population per 30 square meters

Number of Threatened, Endangered, and Imperiled Aquatic Species

It is very easy to add our services to their application, just a matter of copying and pasting a URL. We didn't take the time to adjust the display with more meaningful classification breaks but this is easily done. We can also supply customized maps for some attributes at much finer resolutions. These are just examples, EnviroAtlas likely has other maps that may be useful depending on specific questions. Slide 5 shows a close-up of one of the 12 digit HUCS and the pop-up that will identify specific values for each HUC.

I also added a screen capture using our raindrop tool, although not useful for this response now, it traces the general surface flow pathway of a drop of water from any point on the map to the water body it will enter, may be useful in the future.

On a separate note I was wondering whether anybody from EPA is sampling for macroinvertebrates, they may serve as an indicator of short and long-term sediment toxicity. The paper in this link describes assigning metal toxicity ratings to macroinvert genus/species (<http://www.ncbi.nlm.nih.gov/pubmed/22553143>). EERD folks have done lots of this kind of sampling and analysis. There may be existing macroinvert data from EMAP/NARS or possibly USGS. I read that the Mountain Studies Institute has collected pre and post-spill macroinvert data.

Please let us know if you need additional information or if we can help in any way.

Regards,

Annie

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**From:** Koglin, Eric

**Sent:** Friday, August 14, 2015 10:50 AM

**To:** Sullivan, Kate

**Cc:** Garland, Jay; Schumacher, Brian; Neale, Anne; McDonald, Michael E.; Orme-Zavaleta, Jennifer; Sayles, Gregory; Kavlock, Robert; Burke, Thomas; EOC ORD

**Subject:** RE: Modeling update

Morning Kate

I'm working on the questions Jennifer provided yesterday.

Here's where we are...

The EOC GIS lead, Josh Krochmal (contractor) just provided everyone in the EOC with this link to an ARC GIS map he has been populating with sampling data. I am going to give him a call to see if we can get any additional maps or shape files or whatever he has beyond what's in this link.

<http://epa.maps.arcgis.com/home/webmap/viewer.html?webmap=0225eaf42bb64e649f922d383182e9>

Use your EPA Enterprise LAN username and password to access the map. It clearly does not reflect where additional sampling has/is occurring.

The EPA OSC site has been updated with a new situation report (SITREP 4) and the publically available data: [http://epaosc.org/site/site\\_profile.aspx?site\\_id=11082](http://epaosc.org/site/site_profile.aspx?site_id=11082)

We have put as much pressure as we're comfortable putting on the OSWER Desk (Terry Smith) to get the sampling plan. Terry has been pressing the Unified command hard on sending it to HQ but they are focusing on implementation right now. As soon as

we get it I will pass it along to you so you can see what data they are planning to collect. I think I mentioned yesterday that there was a discussion between the ORD Desk and other EOC members about the possibility of adding some samples and/or analytes to what is being collected. We are going to have to work with whatever they are going to provide and, at least in the short term, there won't be any additions to whatever is in the sampling plan.

I think that the second and third questions will be answered when we see the sampling plan. If I were a betting man (I'm not even though I live in Las Vegas!), I'd bet that they are not focusing on radiological contaminants besides, possibly, gross alpha and beta.

Thanks again for your great work.

Eric

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**From:** Orme-Zavaleta, Jennifer

**Sent:** Thursday, August 13, 2015 2:19 PM

**To:** Sayles, Gregory; Kavlock, Robert; Burke, Thomas; Koglin, Eric

**Cc:** Garland, Jay; Sullivan, Kate; Schumacher, Brian; Neale, Anne; McDonald, Michael E.; Orme-Zavaleta, Jennifer

**Subject:** Modeling update

**Importance:** High

### Hydrologic Modeling

Focus is applying Water quality and bioaccumulation models to understand plume movement, metal chemistry at different points and where metals could precipitate out.

Currently gathering data that Eric is providing, applying multi metal chemistry information. Relying on USGS flow data to parameterize the models. Anticipate modeling outputs early to mid week next week. Will provide you tiered modeling approach tomorrow am.

Potential hotspots of sediment contamination could be where faster moving water hits slower moving water (within a mile of that interface) and where there are pH change interfaces

### EnviroAtlas application

Identifying data layers to use, collecting information on water use sectors, location of imperiled species, demographic maps and potential EJ locations as well as other point discharge locations for metals along the rivers. Hope to have Atlas runs later tomorrow or early next week.

### Questions:

Has the EOC established a GIS site so we know what maps they (Regions or States) are using and have available? Would help to compare with what we have or to provide information they may not have.

Is anyone looking at radiologicals? Often co-contaminants with mining wastes, especially from gold or silver operations. May be of more concern than metals themselves

How are contaminant measurements being collected? In water column only, total suspended solids, or sediments?

